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Are Small Firms More Profitable than Large Firms?

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.	not available for any reference period
...	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0 ^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
P	preliminary
r	revised
X	suppressed to meet the confidentiality requirements of the <i>Statistics Act</i>
E	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)



Are Small Firms More Profitable than Large Firms?

By Amélie Lafrance

This article in the *Economic Insights* series looks at the relationship between firm size and financial performance. It highlights the results from the research paper *Firm Dynamics: Variation in Profitability Across Canadian Firms of Different Sizes, 2000 to 2009*. The research paper uses a special longitudinal database that follows corporate entities. It is part of a set of research projects being carried out at Statistics Canada on the topic of business dynamics.

In the last decade, small businesses have attracted attention, as they are often seen as innovators and job creators. The job and output growth, and contribution to the economy of this group of firms are often compared with those of larger businesses. However, there is little information in Canada on the payoff to small firms for attempting to innovate. Firm performance in Canada has not been comprehensively examined by means of certain financial metrics. This has resulted in a significant information gap because financial performance relates directly to the incentives that entrepreneurs face and the risks undertaken by those who finance firms.

Measuring financial performance

Financial performance across firms of different sizes is examined by using profitability, as measured by return on assets (ROA). ROA is defined as earnings before interest and taxes, divided by total assets. ROA gives an indication of how effectively a company turns its assets into profit. The higher the ROA, the higher the payoff.

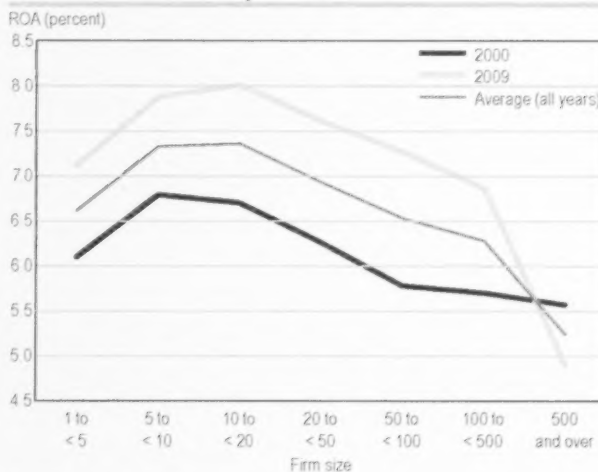
As firms increase their workforce and reduce their operating costs, their profits are expected to rise, albeit to a certain threshold. As a result, one might expect a positive relationship between profit rates and firm size, at least for smaller firms. What the relationship is between size and profitability beyond this threshold has long been a matter of speculation.

Medium-sized firms are the most profitable

Over the 2000 to 2009 period, average profitability was found to follow an inverted U-shaped curve across size classes. As firm size increased, ROA first increased, then reached a plateau, and subsequently decreased. This pattern held over the entire period. The firms with the highest ROA were those of relatively small firms with 5-to-fewer-than-20 employees (Chart 1). The ROA for these firms was just under 7% in 2000 and 8% in 2009.

All firm size classes, except the 500-or-more-employee class, saw increases in ROA during the period. The largest increase was experienced by firms with 50-to-less-than-100 employees.

Chart 1
Mean return on assets by firm size class



Source: Statistics Canada, author's calculations.

In 2009, firms with 500-or-more employees were the least profitable, showing lower rates of return than in 2000.

Risk and return

One of the factors behind differences in profitability and firm size may be differences in risk. Risk in raising capital is often associated with volatility, and a large body of work shows that rates of employment growth tend to be more volatile in smaller firms. This could be because smaller firms seek out more risk in order to attain higher rates of return. It may also be that smaller firms' production structures are more diverse and that, therefore, profitability is more variable across firms in that class. This may occur with younger firms in the early stages of operation, when experimentation with new products and processes is taking place. By contrast, larger firms are older and may have similar production technologies that focus to a greater extent on economies of scale and that therefore produce more homogeneous results.

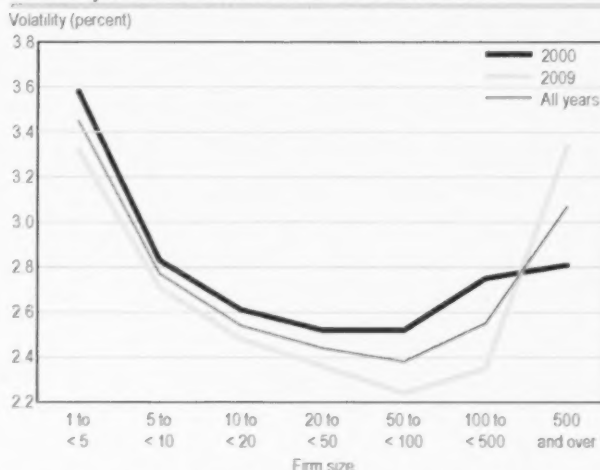
Volatility within a firm size class is measured by using the coefficient of variation (CV), which is calculated as the variance in ROA of different firms within a size class, divided by the mean ROA of firms in that size class. The CV of profit rates of firms within a size class ranged between 2.4% and 3.4% over the period (Chart 2). In 2000 and 2009, the smallest firms (those with fewer than 5 employees) had the highest CV. The diversity of profit rates among firms in a size class was inversely correlated with size for smaller firms. The CV curve decreased with firm size until the 20-to-fewer-than-50-employees group, which is also the range in which firms were most profitable. It then increases slightly for the largest size classes. Nevertheless, the smallest firms exhibit the most intra-group variance. These results provide evidence that, as small firms grow, their financial performance becomes more homogeneous—though this trend reverses itself for very large firms.

Are small firms more profitable?

Profitability varies in a consistent way across firms during the post-2000 period. Profitability gradually increases until it reaches a maximum in the class of firms with 5-to-fewer-than-20 employees. After this maximum has been reached, profitability consistently falls. Smaller firms also experience a much more diverse pattern: they exhibit larger variance in outcomes and generally more intertemporal variation.

Chart 2

Volatility of return on assets within a size class



Source: Statistics Canada, author's calculations.

References

This article in the *Economic Insights* series is based on research carried out by the Economic Analysis Division. For more information, see:

Lafrance, A. *Firm Dynamics: Variation in Profitability Across Canadian Firms of Different Sizes, 2000 to 2009*. Statistics Canada Catalogue no. 11-622-M. Ottawa, Ontario. The Canadian Economy in Transition. No. 026.